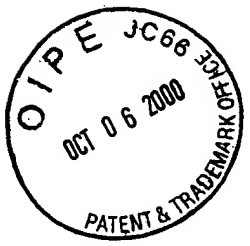
#10

Attach



Docket: 1364.1001-D5/RAG

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Dale Tyson ROBERTS et al.

Group Art Unit: 2758

Serial No.: 09/379,589

Examiner: V. Vu

Filed: August 24, 1999

For: SYSTEM FOR COLLECTING USE DATA RELATED TO PLAYBACK OF RECORDINGS

DECLARATION UNDER 37 C.F.R. § 1.131

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

We, Dale Tyson Roberts and Ann E. Greenberg, citizens of the United States of America and respectively residing at 15 Oak Springs Drive, San Anselmo, CA 94960 and 1369 Summit Park Court, El Cerrito, CA 94530, declare that:

1. Attached as Exhibit A is a draft of a business plan that was distributed on April 16, 1996 to the employees of ION, Inc., the original assignee of the parent application.

2. Attached as Exhibit B are pages 11-31 of a draft business plan for ION, Inc. the original assignee of the parent application. The date, July 28, 1996, at the bottom of each page of Exhibit B is the date that this draft of the ION business plan was received via facsimile by me, Ann E. Greenberg.

3. Prior to April 16, 1996 we conceived monitoring operation of a computer playing back a compact disc and transmitting use data to another computer connected via a network, such as the Internet. This feature is mentioned in Exhibit A, first page, in last sentence of the second paragraph (e.g., "what albums members listen to").

4. The monitoring concept is discussed in more detail in Exhibit B. On page 11 in the sentence continued from page 10 and on page 16 at the end of the first paragraph under "Advertising Revenues" it is stated that the product described in Exhibit B, i.e., the Net Music Channel or NMC, will "track" the CDs played by users. As stated in the second bullet item on page 17, this enables NMC to provide information about the "music listening habits" of users. Thus, as stated on page 15 in the bullet item regarding "use of **agent technologies**", NMC would be able to know of "people who share the same musical tastes".

5. As conceived by July 28, 1996, the information to be obtained by NMC was not limited to what albums are "owned by users" (see page 15 of Exhibit B in the bullet item for "use of **agent technologies**") or in the possession of users (see page 11 of Exhibit B in the second sentence of the first paragraph under "Program 1: Listening Rooms"), but also included other information about CD usage. As described on page 19 in the third bullet item, "CD Ratings Reports" would be generated by NMC with "track data, i.e. what tracks on the CD get listened to the most" and as described on page 30 with respect to "**CD Watcher**", "tracks played or skipped" would be included in "user's CD usage information in ... log file on server."

6. In addition to monitoring how users control a CD, Exhibit B describes other information that is obtained from users. According to the second sentence in the first paragraph under "Advertising Revenues" on page 16 and the first bullet item on page 17, NMC would collect demographic information, such as the age, gender, income and location of users.

7. In addition to monitoring, Exhibit B describes using the usage information to select display data to be sent to the users (see, e.g., the section entitled "Advertising Revenues" at the bottom of page 16 and top of page 17).

8. All statements made herein of our own knowledge are true and all statements made on information and belief are believed to be true, and furthermore these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or

imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application of any patent issuing thereon.

Respectfully submitted,

Dale Tyson Roberts

Ann E. Greenberg

Date: October 4th, 2004

#10

THE PRODUCTS

Opportunity

The world-wide-web provides an unprecedented opportunity for ION's CD technology. The most popular business model for the web is currently advertising. In order to generate advertising revenues, a site must have traffic. Drawing many people to one's site is a real challenge - currently the web is somewhat of a collection of many sites, each of interest to few. The first companies to provide compelling entertainment on the web will have an advantage over the next entrants as they build brand recognition. One thing that the web has been successful in doing is building communities - through chat or interest groups. From the constatation that people like to chat on-line springs the question: what else can people do together on-line? They can play (several companies are developing on-line multi-user gaming systems); chat while browsing the web together; chat while listening to music together; play music, et c.

ION believes that people will want to chat together while listening to music. Music is a natural filter to select people one might want to speak to. Teenagers will want to "hang-out" while listening to their favorite albums. The enormous popularity of MTV's "Beavis and Butthead" series is immediate proof of the concept that real-time critique of music is appealing to a large audience.

Because of ION's MUSILtm technology, the bandwidth problems that would be associated with synchronized chat over a Real-Audiotm stream just disappear, as for the most part users themselves provide the music.

With improvements in bandwidth, ION can enhance Aspen to make it the ultimate music site on the web. ION will prepare for this with a CD-based interface that will provide the graphics and animation.

Aspen is positioned for success given current computer trends. There is increased talk of the computer "moving into the living room", becoming an "entertainment machine", perhaps in the form of an "internet set-top box" sitting on top of the television. In order to make it into the entertainment center of the home (the television), internet sites will have to be entertaining. Most web pages will have a hard time making it to the TV set. Aspen, which is tied to audio CDs, which belong into the living-room in the first place, will have one of the easiest transitions of all.

ION's business plan relies on the premise that ION can provide something that most others can't: music-based entertainment on the web. This competitive advantage is based on our extensive experience with interactive music products, and on our MUSEDtm technology. This enables us to capture a large audience of members, about whose tastes we can learn by keeping track of the CDs they play. This large audience and our priviledged information on our members enables us to provide services to advertisers, from basic billboards for generic sponsors to high value-added for content providers, such as a virtual record release party targeted narrowly at the most likely buyers.

ION's products are targeted at two different groups. The end-user product, **Aspen**, is made available for free to members of the service. The **client services** are targeted at music labels and other corporate sponsors. ION's ability to generate revenues off client services relies in large part on our ability to make Aspen a compelling end-user product.

Aspen - the end-user product

The site will grow from a simple but original concept to a complex virtual venue. Aspen's front-end development is broken down below into different phases.

Phase 1: Web Listening Rooms

Aspen will have 100 listening rooms: five for each of the top ten Billboard albums; forty for member-selected albums; and ten for the purpose of rental to music labels. Each listening room will hold up to twenty users. Upon connection, Aspen will scan members' CD ROM drives and determine whether a CD is in there. Aspen will examine the CD, and if it recognizes the CD as one being played in a listening room, it will automatically route the user to that room. This is accomplished by using ION's proprietary CD-SUStm technology (CD-URL Selection). Otherwise, Aspen will provide the member from a list to choose from, and, if some empty rooms are available, will let users set them up for CDs of their choice. If rooms are available and the member's CD doesn't match any being played, Aspen may automatically create a room for the CD, prompting for information on the album if it is not yet part of the database. The inside of the listening rooms will be set-up as follows:

- **Chat Window**. As the member enters the space, his or her CD synchronizes to the room's master clock and skips to the part of the CD everyone else is listening to. Members thus have a common music background, and can chat regarding the album's few last riffs or any other topic they choose. Because members are required to own the CD in order to enter the room, members inside a room will tend to have more affinity than a group of randomly assembled people. If a member does not own a CD but is still curious to hear it or check its associated chat room, then he / she can enter the room under restricted conditions. First, the member will be able to read the chat, but not to write, thus disabling undesirable interference from people desirous to thrash an artist. Second, the user will receive a stream of Real-Audiotm synchronized to the CD, but that stream will be broken (e.g. one-second silence every fifteen seconds), thus creating "wish-you-were-there" feelings and inciting the user to buy the CD ("buy buttons" connected to an on-line fulfilment store will facilitate such transactions).
- **Synchronized Graphics Window**. This windows displays graphics which are synchronized to the music. These can be video, pictures, animations, highlighting lyrics, et c. The window provides a synchronized enhancement to the CD experience, making it something of a "Net Enhanced-CD". Music labels will have an incentive to provide elements for these functions as a way to enhance the listening experience for their CDs compared to those of competitors.
- **Surf Window**. This window enables members inside the room to surf various web pages together while listening to the music. Users can select from a set of bookmarks related to the album (e.g. band FAQ, discography, et c.).
- **Control Functions**. Rooms can be set-up with different control parameters. In a **Linear Listening** room, the CD plays from beginning to end without interruption. Members control their own surf windows. In a **Guided Listening** room, one user controls the experience. With the help of an on-screen "remote", the controller can skip tracks, repeat passages, choose pages to display in the surf window, et c. Users with long experience on the service could be given those special priviledges, along with the usual policing attributes of chat-room moderators (e.g. "boot"). In a **Collaborative Listening** room, the remote changes hands from member to member. Providing control to the users gives them the power of illustration, e.g. "I love these two bars".
- **Automatic Notification**: members receive e-mail notification of the next time their favorite CD will be played in a listening room - even for eclectic bands, a good-size audience can be gathered by posting notices to the appropriate news group.

Phase 2: Virtual Venue

Aspen will expand out of its small listening rooms into larger listening halls. When members log on, they will have several destinations from which to choose. The listening rooms will still be there. The other rooms / features will be:

1. • **Stage.** Scheduled events will take place. For instance, there will be broadcasts of concerts, with an asociated video screen. The broadcasts, which may be real-time or retransmitted, will provide the broadcaster with an opportunity to sell merchandise. The stage may be used for a number of other purposes. For instance, it can be rented by a record company wanting to do a release party for an album. The concert hall will provide a larger audience than the listening rooms, and will let the label broadcast whatever they want - as opposed to a CD simply playing. The label can broadcast a number of elements concurrently (text, audio, images) to maximize the impact of the release party. Sweepstakes for the new CD can be used to lure people on-line.

• **Green Room.** This is a place where members can hang out before an event happens on the stage. In the case of a concert, members might be able to walk through the guitar player's guitar collection, take a tour of the dressing room or sample advance material.

• **VIP Room.** A place for music industry people to hang-out, exchange gossip and conduct business.

• **Foundation Room.** Special room for the people who built Aspen (underwriters / corporate sponsors).

• **Back-Stage.** To access the back-stage, one must be an active member, as defined by having been a member for over a month, having accessed the site more than ten times overall and having accessed Aspen at least twice in the preceding month. The back-stage will feature after-show parties and pre-edit cuts of the events' best moments.

• **DJ.** One room of the venue is animated by a DJ. The room provides the usual chat functions.

• **Audition Room.** This will be a place for new bands to brodcast their music. This will be a good way for new artists to gather feed-back, as the audition room will let users rate each individual tune, and as the room will also accomodate chat functions. Because of the ease with which new artists will garner feed-back across a broad section of listeners, the audition room can become a quite sophisticated A&R tool for A&R executives, who will have at their fingertips a novel way to gauge what might or might not sell.

• **Open Mike.** Members stand in line to broadcast music pieces.

• **Jam Rooms.** Users can connect their musical instruments to their computers and jam on-line with members thousands of miles away.

• **Store.** Members can visit the store to purchase CDs, tickets and merchandise. Store functions are also integrated throughout the venue with "Buy" buttons.

• **Marquee.** A marquee announces upcoming events, e.g. Soungarden at 8PM.

Phase 3: 3D Interface with disk-based version

In phase 3, ION will release a VRML interface for the virtual venue. The interface will provide the appropriate graphics for Aspen to run smoothly with a sharper look. The disk will install the VRML interface to the hard-drive. The VRML interface will be of great help in navigating the venue, making the passage from one room to another very intuitive. The venue will expand to include thematic rooms, among which users will be able to travel. These will correspond to different music styles, loosely defined as **rock, country, urban contemporary, pop, rap, gospel, jazz, classical, oldies, soundtracks** and others.

The disk will come with three modules that will enable users to customize the Aspen experience:

• **Avatar Builder.** This program allows users to choose a look with which to navigate the venue. Users will have a few basic avatars to choose from which they will be able to customize, or they can decide to design their avatars from scratch.

• **Room Builder.** This program allows users to design listening rooms. Users can design the

appropriate listening room for their favorite artist, and upload the room to the site. If the design is retained, it is made available to high-bandwidth users whenever the approprate CD is played. A listening room could look like a train carriage, a recording studio or a grandiose ballroom.

• **Venue Builder**. This program contains the appropriate graphics for a number of real concert halls. By installing the graphics to their hard-drive, users can customize their Aspen experience to make the environment look like the venue of their choice, e.g. Carneggie Hall, the Oakland Coliseum or a structure based on a combination of several others. Eventually, one can imagine real venues distributing the appropriate Aspen graphical add-on on CDs. Depending on their musical preferences, users can make Rock be the main room, with doors to navigate to the Jazz room and the Classical room, et c.

ION will incite music labels to place things on the CD that are compatible with Aspen. For instance, at the end of the audio track, labels could as a matter of routine add a few standard files (e.g. lyrics, cover art, video for the single, graphics for the album's listening room, et c.). Those standard files (which in a way would make the CD the equivalent of an Enhanced CD without an interface - the interface being Aspen) would be retrieved by Aspen during playback, and would allow to overcome bandwidth limitations.

Phases beyond...

ION will continue to improve Aspen such that it retains its edge as the most entertaining music site on the world-wide-web. Although it is hard to strictly define today what the future features will be, the realm of possibilities, based on the technologies to come, is really endless. Some possible extensions could be:

• use of **video conferencing** within listening rooms,

• as the membership base grows, ads will become increasingly targeted and relevant to individual users, e.g. check this band in your town next week,

• extension of listening rooms to viewing rooms for **DVD**,

• application of **algorythmic music composition** to enable non-musicians to join a jam session in a meaningful way,

• use of **agent technologies** to guide users to new content they might like,

• the database of CDs owned by users would make it possible to complement the listening rooms by quasi-human computer **HAL** to whom users could ask advice on which CD to choose that they all own and like,

• addition of a new type of listening rooms called **Neighbor Rooms** - as the user logs on, she is steared into a room filled with people who share the same type of tastes; Aspen then recommends CDs for the listening session based on which CD the members in the room own.

• addition of a **bar** to the list of rooms on the venue. The bar may be linked to some actual Cybercafes where Aspen stations will be mounted with digital cameras. The stations will enable actual interactions between the bar-based users and those accessing the Net from other locations,

• improvement of the audition room, where instead of playing tapes of aspiring artists, Aspen will make live broadcasts from a **broadcast van** parked outside people's garages,

• improvements in bandwidth and avatar technology may make it possible to have a **virtual mosh pit** in front of the stage,

• improvements in bandwidth through satellite or cable modems, combined with the advent of set-top boxes, will call for a special **TV format** as the Aspen user moves from the computer desk to the living room's sofa,

et c.

Client Services - the revenue model

By successfully patenting MUSIL, Aspen will be a unique system that will provide a level of entertainment quite extraordinary for the web. This will in turn lead to high traffic on the site, which is key to generating advertising revenues - currently the most popular revenue model for content-oriented web sites. Aspen's clients fall into two main categories: generic corporate sponsors and music labels. For these two types of clients, Aspen will offer different products:

Corporate Sponsors Products

ION will provide "real-estate" on Aspen for billboard-type advertising. Space will sell by the month. The ads can be simple banners or complex virtual product demos, which ION can create as ancillary production services. ION's Shockwave expertise will let us seamlessly integrate those into the interface. For instance, for a month whole listening rooms could take the shape of a Nissan Pathfinder, where car controls would correspond to chat controls, ith chat appearing on the windshield, et c.. Billboard ads, which can live in different rooms of Aspen, may be generic or targeted. For instance, when logging on, a 44-year old who listens primarily to jazz might receive an ad for Seagrams gin, a car or a jazz concert in her town; while a grunge teenager might receive an ad for Banana Republic, a new movie or a subscription to Net Gamer.

Music Label Products

ION will provide music labels with three basic products:

- Billboard advertising triggered when specific CDs are played,
- Narrow-cast conduit into their customers - Aspen will let labels provide targeted advertising to members based on what CDs they play (e.g. if one listens mostly to alternative music, "Have you heard the new Black Grape album? Sample it here".).

Ancillary Products

ION will provide both generic sponsors and music labels with the following products:

- Production services
- Transaction processing
- Tailored data reports and mailing lists

In addition, ION will license its technology to third parties for uses that are not competitive with Aspen. For instance, CD-SUS would be of great value for an on-line tech support service, where users insert their CD ROM, the site recognizes it and switches to the appropriate support page; or for a multi-user on-line gaming system, where users insert their CD ROM and the system switches to the appropriate page.

us to capture a large audience of members, about whose tastes we can learn by **keeping track of the CDs they play**. ION's **privileged information about NMC's members** will enable us to provide unique products to our advertising clients, such as the ability to target listeners of a specific band.

The Net Music Channel is positioned for success given current computer trends. There is increased talk of the computer **"moving into the living room"**, becoming an "entertainment machine", perhaps in the form of an "internet set-top box" or "Network Computer" sitting on top of the television. In order to make it into the entertainment center of the home (the television), internet sites will have to be entertaining. Most web pages will have a hard time making it to the TV set. NMC, which is tied to audio CDs, which belong into the living-room in the first place, will have one of the easiest transitions of all.

The Net Music Channel - the end-user product

NMC will be membership-based. Users will be uniquely identified at login time through whatever scheme is available (type-in password, automatic password, ICODE, cookie, digital certificate). While the full-featured channel described here will be accessible only for a fee, ION will also provide a free version of NMC which will also require registration and will have restricted features. NMC's development phases will roughly correspond to the release of the channel's various programs.

Program 1: Listening Rooms

Initially there will be 100 listening rooms: five for each of the **top ten Billboard albums**; forty for member-selected albums; and ten for the purpose of rental to music labels. Each listening room will hold up to twenty users. Upon connection to the program, NMC will scan the user's CD ROM drive and determine whether it contains a CD. NMC will examine the CD, and if it **recognizes** it as one being played in a listening room, it will automatically route the user to that room. This is accomplished by using ION's proprietary CD-SUS™ technology (CD Systematic URL Selection). Otherwise, NMC will provide the member with a list to choose from, and, if some empty rooms are available, will let her set one up for the CD of her choice. If rooms are available and the member's CD doesn't match any being played, NMC may automatically create a room for the CD, prompting for information on the album if it is not yet part of the database. A **schedule** announces listening times in the different rooms. The schedule is important in creating a sense of a programmed experience. The schedule **is tied to record releases.** It announces when new albums / material for an album will go up on the program. Making ownership of the CD a requirement to entering the listening room limits interference by undesirables.

The inside of the listening rooms will be set-up as follows:

• **Chat Window.** As the member enters the space, his CD synchronizes to the room's master clock and skips to the part of the CD everyone else is listening to. Members thus have a common music background, and can chat regarding the album's few last riffs or any other topic they choose. Because members are required to own the CD in order to enter the room, members inside a room will tend to have more affinity than a group of

randomly assembled people. Although NMC chat will eventually incorporate all the bells and whistles of virtual worlds, chat will originally be limited to basic "off-the - shelf" chat with a few enhancements (e.g. "This sucks" taunt button).

• **Surf Window.** Members inside the room can surf various web pages together while listening to the music. Users can select from a set of bookmarks related to the album (e.g. band FAQ, discography, et c.). Surf can be monitored by guides (see below).

• **Control Functions.** Rooms can be set-up with different control parameters. In a **Linear Listening** room, the CD plays from beginning to end without interruption. Members control their own surf windows. In a **Guided Listening** room, one user controls the experience. With the help of an on-screen "controller", the user can skip tracks, repeat passages, choose pages to display in the surf window, et c. Users with long experience on the service could be given those special guide privileges, along with the usual policing attributes of chat-room moderators (e.g. "boot"). Guides can also be staff or celebrities. In a **Collaborative Listening** room, the controller changes hands from member to member. Providing control to users empowers them to illustrate the subject of their chat (e.g. "I love this riff").

• **Automatic Notification**: on request, members receive e-mail notification of the next time their favorite CD will be played in a listening room.

Program 2: Net Enhanced-CDs

NMC will provide Enhanced-CD-like experiences across the net. For this purpose, users will be able to use regular audio CDs, as all the computer data will come from ION's server. The graphics provides a synchronized enhancement to the CD experience, making it something of a "Net Enhanced-CD" or a video juke-box where the user provides the CD and the net provides the images. Music labels will have an incentive to provide elements for these functions as a way to enhance the listening experience for their CDs compared to those of their competitors, and ION will try to secure the album booklets' electronic publishing rights. The graphics displayed will vary across a wide range:

• **Animations.** ION has developed web-based animations that synchronize to the CD for the whole length of a song. Animations can be **specific** to the song, or **generic**: designed to fit a whole range of songs (e.g. animation for slow love song, or up-tempo rap song).

• **Pictures** or graphics that are **triggered** at certain points in the music,

• **"Point-and-Click Lyrics"** that highlight as the music plays and that users can click on to go to a place on the CD,

• **Algorithmic** or **generative** graphic engine animating a few elements, or pulsating to the CD's beat, in a bandwidth-economical way,

• **Streaming video,**

et c.

Program 3: Recorded Guided Tour (CD-TOUR™).

NMC will provide guided tours of some albums, which users will be able to take individually at anytime. Guided tours can either be provided by independent individuals, or spun off from chat sessions with the artist, where the artist comments on

the album, e.g.: "this line refers to the trip to Canada I took when I was in high school". The guided tour is a control file which contains a list of events to trigger at certain times in the experience. For instance, the file can display some explanatory text as it plays certain passages of the CD. The text might say: "I used a variant of this riff on the seventh track... listen", while the CD plays the appropriate passages - whole songs or snippets, playing linearly or skipping back and forward depending on the format of the tour. The tour is an extremely low bandwidth experience that provides great value for the fan (e.g. Bono guides you through the new U2 album).
In addition to text and CD time codes, the control file can contain names of images or videos to display at specific times. Interactivity can also be introduced by letting the user make choices during the tour (e.g. "would you rather now hear me comment on track 3, or on the use of synthesizer throughout the album?").

Program 4: Virtual Venue
The virtual venue will attempt to create the atmosphere of a real venue, on-line.
• **Stage.** Scheduled events will take place. For instance, there will be broadcasts of concerts, with an associated video screen. The broadcasts, which may be real-time or retransmitted, will provide the broadcaster with an opportunity to promote a band or sell merchandise. The stage may be used for a number of other purposes. For instance, it can be rented by a record company wanting to do a release party for an album. The concert hall will provide a larger audience than the listening rooms, and will let the label broadcast whatever they want - as opposed to a CD simply playing. The label can broadcast a number of elements concurrently (text, audio, images). NMC's broadcast channel, used jointly with promotions such as sweepstakes, will make a powerful promotional tool.
• **Green Room.** This is a place where members can hang out before an event happens on the stage. In the case of a concert, members might be able to walk through the guitar player's guitar collection, take a tour of the dressing room or sample advance material.
• **Foundation Room.** A place for VIPs to hang-out, exchange gossip and conduct business. Access is provided to music industry people, underwriters, band members, et c.
• **Back-Stage.** To access the back-stage, one must be an **active member**, as defined by having been a member for over a month, having accessed the site more than ten times overall and having accessed NMC at least twice in the preceding month. The back-stage will feature after-show parties and pre-edit cuts of the events' best moments.
• **DJ.** One room of the venue is animated by a DJ. The room provides the usual chat functions as well as streaming audio for sound.
• **Audition Room.** This will be a place for new bands to broadcast their music. This will be a good way for new artists to gather feed-back: the audition room will let users rate each individual tune, and will also accommodate chat functions. Because of the ease with which new artists will garner feed-back across a broad section of listeners, the audition room can become a quite sophisticated A&R tool for A&R executives, who will have at their fingertips a novel way to gauge what might or might not sell.
• **Open Mike.** Members stand in line to broadcast music pieces.

• **Store.** Members can visit the store to purchase CDs, tickets and merchandise. Store functions are also integrated throughout the channel with "Buy" buttons.
• **Marquee.** A marquee announces upcoming events, e.g. "Soundgarden at 8pm".

Program 5: Collaborative Jamming
Ideally, users would connect their musical instruments to their computers and jam on-line with members thousands of miles away. However, latency issues which are critical to musical expression may never allow this, regardless of how much bandwidth improves. ION has many creative ideas as to how to overcome these intrinsic limitations and how to let users express themselves musically together across the net. ION has experience in the field of virtual instruments with Jam Session, which was co-programmed by CEO Ty Roberts. Jam Session was one of the first programs letting music neophytes "jam" by way of constraint-based filtering algorithms and of a friendly graphical interface.

Program 6: Personality Show
This program will feature hosts - either regular hosts or contributing personalities - who will guide members through music. Celebrity chat can be taken to the next level with the live version of Recorded Guided Tours: a band can come on-line and comment on their latest album not only by chatting but also by sending control codes that display graphics on users' screens and play music off their CDs. A contemporary music critic could say "show up for next Tuesday's show with the following five CDs, you'll need them". Users would have the option of purchasing the appropriate CDs at a discount.

Program 7: Net Karaoke
The experience described in Program 2 as "point-and-click lyrics" can easily be modified to fit a Karaoke system, where lyrics highlight syllable-by-syllable as the CD's music progresses and an appropriate slide show is displayed.

Other GUI Features
• **Waiting Room:** Currently, web services do not put a ceiling on the number of people who can access their sites at a given time. As a result, the quality of the experience degrades as the number of users increases. In contrast, NMC will operate under the assumption that most of the time, it is better not to be connected than to be connected at less-than-par speed. NMC's logon server will be separate from the program servers, and will assign priority numbers to members when the programs overflow. Members will be able to continue surfing the web, and will receive a pop-up notification when space becomes available on NMC. Alternatively, users can wait for their admittance notification while being entertained at lower bandwidth (e.g. playing games) in NMC's waiting room on the log-on server.
• **Preview Mechanism**
ION will use streaming audio as a means to provide a taste of the programs to users who do not own the CDs, and hopefully generate "wish-you-were-there" feelings that will incite them to buy the albums ("buy buttons" connected to an on-line fulfillment store will facilitate such transactions). The GUI to most previews will be the

MusicCaster, a guitar-shaped interface that lets users select programs by turning knobs (e.g. rock/alternative/rap lever et c.)

• **Show Grabber**

Custom TCP/IP software automatically dials at night and downloads the graphics to specific programs in advance to let users enjoy the programs with minimum wait - at program time, bandwidth economical elements will come across the net while large graphics will be cached on the user's hard-drive.

• **Content on Disc.** ION will incite music labels to place things on the CD that are compatible with NMC. For instance, at the end of the audio track, labels could as a matter of routine add a few standard files (e.g. lyrics, cover art, video for the single, graphics for the album's listening room, et c.). Those standard files (which in a way would make the CD the equivalent of an Enhanced CD without an interface - the interface being NMC) would be retrieved by NMC during playback, and would allow to overcome bandwidth limitations.

Phases beyond...

ION will continue to improve NMC such that it retains its edge as the most entertaining music site on the world-wide-web. Although it is hard to strictly define today what the future programs and features will be, the realm of possibilities, based on the technologies to come, is really endless. Some possible extensions could be:

• distribution of NMC's graphics and software libraries on a CD as **NMC Gold**, which users will install to their hard-drives, providing them with a sharper, speedier experience as less information needs to come across the net,

• as the NMC **brand** develops, opportunities for merchandising will appear. For instance, in a venture with music labels, ION could launch a **CD music magazine** which subscribers would receive monthly. The CD would be a compilation of the tracks corresponding to the animations to go up that month on NMC,

• use of **video conferencing** within listening rooms,

• as the membership base grows, broadcast messages will become increasingly targeted and relevant to individual users, (e.g. "check this band in your town next week"),

• extension of listening rooms to viewing rooms for **DVD**,

• use of **agent technologies** to guide users to new content they might like - the database of CDs owned by users would make it possible to steer members into chat rooms filled with people who share the same musical tastes, and for NMC to recommend CDs for them to listen to together based on which albums they own,

• addition of a **bar** to the list of rooms on the venue. The bar may be linked to some actual Cybercafes where NMC stations will be mounted with digital cameras. The stations will enable actual interactions between the bar-based users and those accessing the Net from other locations,

• improvement of the audition room, where instead of playing tapes of aspiring artists, NMC will make live broadcasts from a **broadcast van** parked outside people's garages,

• improvements in bandwidth and avatar technology may make it possible to have a **virtual mosh pit** in front of the stage,

• improvements in bandwidth through satellite or cable modems, combined with the advent of set-top boxes, will call for a special TV format as the NMC user moves from the computer desk to the living room's sofa,
• the Virtual Venue will evolve toward a VRML world which will make the passage from one room to another very intuitive. The venue will expand to include thematic rooms corresponding to different music styles. Experience shows that letting users customize their web experience helps build a site's traffic, a phenomenon from which ION intends to fully benefit: the Venue will include an avatar builder, a room builder and a venue builder - so that the environment might look like Carneggie Hall or the Oakland Coliseum,
etc.

THE REVENUE MODEL

Subscription Revenues

ION operates under the assumption that if the site is not worth paying for, it's not worth making. The Net Music Channel will be a paying service. A free version with restricted features, which will serve as a teaser, will also require a sign-up process. Revenues from members will come from:

- Basic Membership Fee

  Members will pay $3 per month or $25 per year.
- Special Events

  NMC will organize some special events, such as broadcast of live events or panel discussions. Special events will be available both to members and non-members, at different rates. Some events might be free for members and be charged five dollars for non-members, et c.

Advertising Revenues

NMC's advertising clients fall within two main categories: music labels and others. Generic corporate sponsors will be able to target their audience thanks to the information NMC collects about its members. For instance, when logging on, a 44-year old who listens primarily to jazz might receive an ad for Seagrams gin, a car or a jazz concert in her town; while a grunge teenager might receive an ad for Banana Republic, a new movie or a subscription to Net Gamer. In the case of music labels, NMC's privileged information about members' listening patterns (NMC will track which CDs users play) will lead to much more elaborate products. NMC will offer the following advertising products:

- Generic Banners Ads

  Banner ads are simple chunks of NMC "real-estate" with a commercial message. Clicking on the banner enables the user to learn more about the offering. Click-through ads can range from simple copy to virtual product demos using sound, video clips, animation, games, et c.

- Targeted Banner Ads

While generic banner ads are shown to all NMC users, targeted ads are seen only by a subset of members. Advertisers will be able to target members based on:

- demographic data; users provide this data at registration time. This data will allow NMC advertisers to target users based on age, gender and income. Through the Net Music Channel, advertisers can also target specific geographical markets by making use of members' zip code information.
- music listening habits; while many sites collect demographic data about their users, NMC's ability to keep track of CDs played by users will be unique and will provide the music industry with a powerful tool. For instance, Tower Records will be able to reach all NMC viewers who play Prince albums and tell them about a promotion on the latest release. Music label executives will virtually be able to pick up the mike and say "Buy the new Michael Jackson CD". Also, ION will be able to provide a different audio track for the same visual ad depending on the user's listening habits.

• Interface-Integrated Ads

Ads will be more effective if they are integrated into the interface, as opposed to sitting somewhere on the border where they are more easily ignored. ION's animation expertise will let us accomplish such seamless integration. For instance, whole listening rooms could for a month take the shape of a Nissan Pathfinder, where car controls would correspond to chat controls, with chat appearing on the windshield. Ads could animate on the walls of the virtual venue; et c.

• Tests

NMC will let advertisers test consumer response for the three above ad categories. Advertisers will be able to test different ads on specific demographic, geographic and music markets.

Transaction Revenues

ION will take 5% of all transactions occurring on-line through the Net Music Channel. These transactions will include:

• Purchases from the situation-sensitive "Buy" buttons scattered through NMC. For instance, inside the Smashing Pumpkins listening rooms, one will be able to purchase the band's CDs, concert tickets, T-shirts and other merchandise.

• Purchases from the NMC on-line store.

• Purchases from click-throughs on banner ads.

In addition, ION believes that the successful **development of NMC into a strong brand** will lead to additional merchandising opportunities, such as NMC books, NMC magazine, monthly NMC CD compilation corresponding to new animations on the site. Indeed, if NMC is successful, its brand may become its single most valuable assets, with revenue opportunities far beyond the assumptions of this business plan.

Programming Revenues

While users may have access to a vast amount of static content on NMC, a large part of the draw will be the dynamic content of the various programs. The model for that dynamic material is very much that of a channel, where the amount of content is necessarily limited and subject to the channel's programming. ION chooses what goes into the 100 listening rooms of NMC. As the channel gains momentum, labels will be paying to rent some of those rooms (programming space), as they now sometimes pay to have videos aired on MTV. Programming revenues will be made of:

- Listening Room Rental

  At any given time, music labels will be able to book ten percent of the rooms on NMC for albums of their choice. Labels will have some amount of control as to what goes into those rooms: they will be able to choose a listening mode for the rooms (guided, et c.); to make their artists appear in the rooms and chat with the audience; they will have access to the chat's script; et c.

• Virtual Release Parties
NMC will host limited-time events that will take up interface space. A virtual release party may be a room featuring chat, interview snippets, sound and video samples, buy buttons, sweepstakes et c.

• Virtual A&R
NMC will let members rate bands they hear in the audition room. These ratings, combined with their users' listening profiles, will be a helpful way of knowing whether bands will sell. Labels will be able to :
- subscribe to NMC's ratings reports
- submit bands for rating, for a price. A comprehensive ratings package might include quantitative data as well as qualitative data extracted from focused chat. Quantitative analysis (possibly backed-up by AI) on the ratings and the profiles of the rating members would help determine a marketing strategy for the band.

• CD Ratings Reports
On request, NMC will provide music labels with reports on individual albums. The reports will include quantitative and qualitative data similar to that of the A&R reports. In addition, the report will include track data, i.e. what tracks on the CD get listened to the most et c.

• Content Hosting
While in the early stages ION will encourage labels to provide content for NMC, when the service gains momentum ION may be able to charge for hosting or linking content to albums and artists.

• Waiting Room Hosting
For a fee, NMC will absorb traffic from other overflowing sites into its waiting rooms. Users will be pushed back to their original provenance once space becomes available there.

• Original Content Licensing
ION will archive its programs, thus creating a library of content for potential future use. Such content may become valuable in the future (e.g. footage of a chat session with an unknown band).

Technology Licensing Revenues
ION will license its technology on a project-by-project basis. The following are examples of likely licensing arrangements:

• Children's Market (and other vertical markets)
ION has entered discussions to make an on-line CD controller that would synchronize character animations to children's CDs.

• Graphics Engine

ION has sold a license to some of its code to Vusic, a product that creates graphics on the fly which synchronize with the audio CD. ION could enter into such an arrangement for synchronization over the net.

- Recognition Database

As ION's database of recognized CDs grows, it will become valuable for third parties in conjunction with the recognition algorithm (CD-SUS™). For instance, the database could allow CD-controllers shipping with the Mac and Windows operating systems to automatically display the names and track titles of albums played in users' CD-ROM drives.

It is fair to assume that in developing NMC, ION will constantly create technologies the use of which won't be specific to NMC but which will have commercial value for other web services.

Production Revenues

ION will do production work on a work-for-hire basis for projects that are synergistic with NMC. These will include:

- Shockwave or Java Ads

ION's experience of making animations over the net will translate well to net advertisements. A by-product of our engineering effort will be technologies that let us push the envelope of the interactive ad (e.g. engine that animates a given ad to the beat of the CD the user is listening to).

- Synchronized Animations for CDs

Artists or labels may be willing to pay for the animations that will appear in Program 2 in order to promote their records. Net Enhanced-CD animations are a good alternative to E-CD for artists or labels who want to do only one song, or who may be wary of including time- and platform-sensitive computer data on a physical disk. ION is currently negotiating a contract for twenty song animations.

THE MARKET

There is a wide range of fluctuation for internet-related statistics. The numbers we use are "reasonable estimates" based on a variety of sources.

The Internet and On-line Market

Internet

Although the internet dates back several decades, the web, which was developed at Switzerland's CERN in 1992, is a recent arrival. The web's growth has been explosive, with over 25 million users worldwide and 200,000 web sites offering 20 million pages of information. Morgan Stanley predicts that there will be more than 150 million web users by the year 2000. Hambrecht & Quist predicts that the global internet market will reach 23 billion dollars by year 2000, 10 billion of which will come from content.

On-line

With the explosion of the internet, on-line services are having to rethink themselves. All three major on-line service providers (AOL, Compuserve and Prodigy) have modified their product offering such that they provide internet access like regular ISPs. There has been speculation that the web would mark the death of on-line services. This is unlikely if on-line services, which are a superset of the web, continue to provide some hard-to-replicate advantages:

- ease-of-use through integration and proprietary interface design, which is an important characteristic for the second-wave of less computer literate adopters now hitting the web / on-line world,
- a clear revenue model for content providers (through hourly access fees), which is important in order to justify the budgets required for a media publisher of consequent size to develop an adequate offering.

The top four on-line services (Microsoft included) now have a combined subscriber base of 11.8 million.

Broadband

A year ago, broadband networks seemed as distant as the middle of the next decade. Today, it seems that broadband may become a reality - at least for some - as early as next year. Sunnyvale-based @home is the most visible of the companies trying to make ground in the broadband industry. However, there exist a multitude of companies developing broadband technology - whether cable-based, satellite-based or phone-based. In parallel, there is great momentum behind the development of an internet set-top box, with competitive offerings from (among others) Oracle, Sun and arguably Apple (Pippin). The one thing that will be missing from the equation is content. Although several companies (one of the most prominent being Microsoft) have invested in digital studios for the purpose of developing interactive content, it is yet unclear what that content will be. The one certitude is that it has to be different from traditional broadcast content in order to be compelling. ION aims to provide some of that content through NMC.

The Customer

NMC's customers fall into two groups: end-users and corporate clients.

End-Users

There are 10 million US home web users. Although the current growth rate (100% yearly) is clearly not sustainable, there are already 33 million US households equipped with computers; combining multiple users per households with the impact of the 500$ internet box, a **five-year target of 50 million users** seems reasonable.

Key demographics for web users are as follow: only one third are female; the median age is 30; 93% of users have some college education; average household income is around $60,000. One survey shows that 70% of web users fall into the psychographic categories of Actualizers and Experiencers, which tend to be innovators. NMC will first **focus on the 15-30 age group**, which offers the best cross-demographics between the music industry and the internet (it represents 44% of CD purchases; MTV's target age group is the 15-34).

Web users spend over three hours on-line per week, with the average session lasting over an hour. The most common access platform is Windows (62%), followed by Macintosh (21%). Web access is still a low-bandwidth experience, with only 20% of net surfers at speeds above 14.4Kbps. Bandwidth limitations are an advantage for NMC, as for most programs the audio will come from the CD, rather than across the net and consuming CPU cycles.

Clients

- **Corporate Sponsors**

In the fourth quarter of 1994, WebTrack identified 270 web advertisers, with budgets ranging from $5,000 to over $500,000. The top ten spenders represented 26% of the total $12.4M expenditure. Those sites were AT&T, Netscape, the Internet Shopping Network, NECX Direct, Mastercard, American Airlines, Microsoft, c|net, MCI and Sportsline, each with budgets over $200,000. Those numbers are somewhat mitigated by the existence of barter practices between sites, which do not involve the exchange of hard cash. In general, it is fair to say that web advertisement is still at experimental stages. In light of the ten billion dollars spent each year for network TV advertising in the US, there is clearly room for the market to grow from Q4 1995's $50M annual rate.

- **Music Labels**

ION already has firmly established relationships at all of the major music labels due to its services as a producer. ION is a well-known name and respected entity at all of the labels. Due to its contacts, ION's task of evangelizing NMC to the labels will be greatly facilitated. Although all of the labels have established new media departments, it is in general fair to say that there are still relatively few technology savvy people at the labels, leading them to rely heavily on outside help for technology.

Satisfying the Customer: NMC's Unique Selling Proposition for Advertising

By successfully patenting its technologies, NMC will be a unique system that will provide a level of entertainment quite extraordinary for the web. This will in turn lead to high traffic on the site, which is key to generating advertising revenues.

NMC will provide a **Unique Selling Proposition** to advertising customers by satisfying what has been dubbed the "Five Cs" of on-line advertising:

Cost

NMC will maintain **rates** that are competitive with other on-line advertising vehicles. The pricing structure for web advertising is not yet well established; prices currently fall within a CPM (cost per thousand) of $30 to $200. At the low end are generic billboard-type impressions. At the top end are impressions for which the content provider is able to deliver a specific set of demographics to the advertising client. The pricing structure will probably continue to evolve to distinguish click-throughs, i.e. instances where a user clicks on an advertising banner to request more information. Procter & Gamble was able to establish a precedent by negotiating a contract with Yahoo! whereby they would be charged only for click-throughs. It seems reasonable to expect that pricing of on-line advertising would evolve toward something like a $30 CPM for generic impressions (which compares with a $70 CPM for outdoors billboard impressions); a $100 CPM for targeted impressions (which compares with CPMs in the hundreds for print magazines); and a CPM of $250 for click-throughs, which compares to the $1000 CPM for opened pieces of direct mail.

NMC will enable precise **targeting**, thus enhancing the ads' efficiency. NMC will maintain a database of information about each user. First off, NMC will gain information pulled from the end-user at registration time - such as age and income group. Second, NMC will obtain information pushed from the end-user, whether voluntarily or not. For instance, a user who rates an album voluntarily pushes information to the system. A user who inserts a CD into his CD ROM drive involuntarily pushes information on to NMC. Through the use of regressions or AI algorithms on member data, ION will be able to deliver stratified selection to a level of fine detail. ION believes that NMC will enable the company to gather more information about its end-users than most on-line services, and that this in turn will provide the company with a competitive advantage in selling advertising space.

ION also hopes that the unique entertainment value of its service will enable it to grow the end-user base quite aggressively, thus giving NMC excellent **reach**.

Content

The key to drawing users to the site is content that is both **compelling** (to get users on the site in the first place) and **fresh** (to ensure that members come back for more). NMC's content will be compelling - our proprietary technologies will enable us to deliver exceptional net-based music entertainment. Also, NMC's content will constantly change, both because of new album releases and because of constant feature upgrades.

Context

The effectiveness of an ad is highly dependent on the context within which the message is delivered. NMC will provide an ideal platform for advertisers to reach their target. The nature of the service lends itself well to ad blending. For instance, teenagers, who are used to seeing ads when watching MTV, will not be surprised to see those same lifestyle advertisers on NMC. By providing entertainment, NMC

lets advertisers convey their message at the **time when they are the most receptive**. One is clearly more receptive to the idea of buying a car when one is enjoying oneself than when one is absorbed in work - e.g. busy doing some research through a search engine. For the music labels, the ad / context relationship is even stronger, as the ad is the natural extension of the content (e.g. "you listened to the Smashing Pumpkins' CD, did you know they're playing in your town next month?"). Even for generic sponsors, ION can enhance the context relationship by blending the ad into the interface - for instance, the interface used to control the CD might be made to look like a car or a bottle of coke. This transforms the ad itself into actual entertainment, providing the web equivalent of the "infomercial" or "advertorial".

Control

An important factor for advertisers is to be able to control what they spend and how they spend it. ION will respond to these needs by being extremely flexible. NMC's environment lends itself well to customization - e.g. a sponsor's banner does not necessarily have to be in the top inch of the page, but could be incorporated in different ways. Flexible banner arrangements increase an ad's effectiveness - if the user can predict that an ad will be on page two of a magazine, she might turn the page without even looking. ION will also provide several rate options for advertisers to choose from, so that the cost of the campaign meet their objectives. Different goals might be:

- fixed cost: ION will provide a fixed rate for fixed numbers of impressions. When the target number of impressions is reached, the ad will roll off.
- fixed time: ION will provide rates for ads to be displayed by the day, week, month et c.

ION may develop proprietary software to manage ad rotations on the site, or may choose to license an off-the-shelf solution, such as NetGravity's AdServer web advertising management software.

Counting

An important factor in selling ad space is the ability to provide sponsors with credible numbers as to the ad's reach (how many separate individuals are exposed to the message) and GRP (Gross Rating Points, i.e. total number of impressions, including duplications). Hits are an unsatisfactory measure of web traffic as they do not measure individual visits. ION will have two ways of providing sponsors with the actual data:

- because NMC is a membership-based service, ION can keep track of who looks at what.
- ION will use the services of an external auditor. Several companies have established to provide such services (NetCount, Webtrack, I/PRO). ION already has a relationship with San Francisco based I/PRO (ION developed I/PRO's multimedia presentation for Internet World 1996), which it intends to cultivate.

MARKETING PLAN

NMC is both a technology company and a channel. Similarly to the broadcast world, the channel will largely be dominated by ratings, the object of the "game" being to attract and capture the on-going attention of consumers. ION's unique angle on attracting consumers is to leverage an already hugely successful product, the audio CD. Through ION's technology, NMC will add value not only to newly released audio CDs, but also to CDs which consumers might have purchased 10 years ago. NMC enlivens a consumer product which never anticipated multimedia, and consumers will be thrilled to find that dollars they spent ten years ago are still buying them fresh entertainment. ION calls this marketing concept "life after shipping". This value-adding technique will first attract users to the service; providing compelling content will keep them there.

The marketing of NMC will be one of ION's most critical tasks. Indeed, NMC is a service, with a large number of customers to satisfy, some with different needs - end users and clients. In order to attract and retain advertising clients and content providers, NMC will first need to develop a strong end-user base. It is thus primordial for NMC to quickly establish brand recognition and thus to have a powerful launch.

Launch

ION will advertise the Net Music Channel to maximize visibility to end-users. Initially, ION will pursue web-only advertisement. Where possible, we will use barter with technology partners - for instance swapping banners between sites. Concurrently to advertising, ION will seek as many links as possible on search engines and directory tools in order to build the NMC brand name. ION will leverage its strategic alliances, as they are struck, to release press announcements which will enhance sponsor awareness.

Maximizing Penetration

- ION will use advertisements in targeted magazines such as Rolling Stones and Wired to attract the largest possible number of end-users.
- NMC's ability to be customized by users will be a factor in attracting members.
- NMC will let users register for a free version of the Net Music Channel, which will demo the capabilities of the channel across a narrower range of content.
- Special events, also accessible for a fee to non-paying members, will encourage people to go through the registration process.
- When CDs from eclectic bands are being played, ION will post announcements to the appropriate news group.
- ION will attempt to develop "joint membership" programs with services enjoying large installed bases.
- Ultimately, the best way for NMC to grow its membership base will be to be as close to the interface as possible. Ideally, ION wants to become a button on the desktop, or a button inside the browser.
- NMC Gold's graphical interface will make it a prime candidate for OEM hardware bundles.

Distribution Channels

At first, ION will provide access to NMC solely through the internet. Mid-term objectives will be to extend NMC's distribution, both in order to gain a wider membership base and to position ourselves for acquisition by a broadcaster. Additional distribution mechanisms will be:

- On-line service

ION will attempt to make NMC available through AOL, Compuserve or the Microsoft Network.

- CDs

ION will attempt to create an alliance with a major music label, such that NMC's graphic-intensive version (NMC Gold) be distributed as the ROM portion of some Enhanced-CDs.

- Licensing

ION will license its second-to-best technologies to competitors, so as to provide an easy technology solution discouraging heavy R&D investments in the field.

Customer Service

ION will strive to maintain exemplary customer service as a way to differentiate itself from other web services.

- Members will receive 24-hour on-line support via e-mail and chat boxes. ION will be sensitive to members' needs for confidentiality of information. ION will never pass along members' addresses, telephone numbers or e-mail addresses to its clients. Instead, ION will let users be known to clients as their aliases on the service (i.e. Paul Smith may be known as Tarzan24, not his real name). All solicitations will happen through NMC, reducing members' potential fears of getting swamped by unwanted calls or mail or e-mail.
- Corporate clients will receive immediate attention from ION's management, sales and technical staff. ION will be attentive to always improve the value proposition for its paying clients by introducing new services, providing customized reports and altering the pricing structure in order to remain competitive.

STRATEGY

Strategic Alliances

The web is witnessing and will continue to witness a proliferation of services, many of which are competitive to NMC in one way or another. As larger corporations, who were standing on the sidelines, enter the market in force, being associated with larger companies will become a key ingredient to survival for smaller businesses. ION will seek alliances with the following types of companies:

- Music label; although ION wants NMC to be "label agnostic" on the outside, ION will seek a privileged relationship with a major label in order to jump-start the content acquisition process. For historical reasons, the most likely candidate is currently MCA (one of ION's former employees is now V.P. of Interactive Programming at MCA).
- Web Advertising Agency; a close working relationship with an ad agency will facilitate client acquisition. The most likely candidate is currently Modem Media.
- Browser Software company; ION wants NMC to be as close to the browser's navigation buttons as possible.
- Online service; online services need differentiating content, and make most of their money on chat. NMC has both, and could benefit from an online service's delivery pipeline.
- Technology providers; ION combines its proprietary technology with off-the-shelf technology to create NMC's compelling environment. NMC will be an ideal place for some companies to demonstrate their technologies; close relationships will ensure that we always have their most advanced product. Likely candidates are I-Chat and Macromedia (with which ION employees have close relationships for historical reasons).
- Other membership-based service: ION will explore ways to boost its membership base by letting members of other services automatically become NMC members (and vice-versa).

Label Relationships: The MTV Model

ION believes that there is a precedent to be followed in the path of MTV's rise to media superpower. MTV started small and were then not perceived as threatening by the music labels. They did not cut into record companies' core business (record sales) and in fact complemented it: MTV was a new, exciting way to promote albums. The early challenge for MTV was to procure content. They had to convince music artists to explore the medium of music videos, and music labels to pay for their development. Because production costs were small, record companies were at first willing to dabble, and either they or the artists owned the video. At that time, MTV derived its revenues from cable companies, and those revenues were perceived as small change by the labels. When the cost of music videos began to soar, record companies began to balk at paying for a promotional medium with no trackable revenues attached. MTV then proposed to foot some of the production costs against the exclusive license to broadcast the videos and the right to bring in advertisers. The labels accepted, and a virtual monopoly was created.

Today, ION is in a similar situation to MTV in its early days. NMC will be non-threatening to music labels as:
- it will promote the albums; indeed NMC will do a better job of that than MTV in that it will actually require users to own the CD - whereas MTV does not require a record sale and is often turned on and off like a radio,
- the medium is new and music labels are uncertain that the on-line experiences we provide actually enhance the albums, and
- music labels will not consider the initial revenue streams as significant. Like MTV, NMC has the opportunity to build a brand by exploring a new medium while locking up the rights to the content for that medium. Just as music videos became less experimental over time, NMC will progressively refine the experiences it overlays on top of the audio CD, and the rights to those experiences will become more valuable.

Proprietary Technology
ION has developed the cross-platform CD-control code that is integral to most Enhanced-CDs published to this day across all music labels. ION's ability to use that code (co-owned by Macromedia), which is central to synchronizing CDs to the internet, puts us one step ahead of the competition.
NMC will be based on several unique technologies, which are briefly described below:

- **ION Technology 0002-0000: CD Control From Net With Status**
  Description: enables internet applications to speak to user's CD ROM drive and get values back from it.
  Implementation: Shockwave application resident on web page speaks to DLL (Windows) or Xobject (Mac) that issues commands and feeds back status from the CD ROM drive.
  Applications: Audio CD controller displayed on a web page, which lets users play tracks, skip, et c. and displays track numbers, play times, et c; image map of song lyrics which allows user to skip to place in the CD by clicking on the appropriate lyric; other metaphors for CD control (e.g. clicking on a slice of pizza plays track one).
- **ION Technology 0002-0001: Net Synchronized to CD ("CD-NETSYNC™")**
  Description: allows web-based experiences to synchronize to audio CDs, enabling high quality multi-media experiences over the net.
  Implementation: Shockwave application resident on web page speaks to CD ROM drive using Technology # 1, and displays graphical elements based on the time status reported by the CD player.
  Applications: Song animation within a web page, synchronized to audio CD; Video animation within a web page, synchronized to audio CD; Slide show within a web page (combining images, text, other multimedia elements displayed in different parts of the screen), synchronized to audio CD; algorithmic image composition within a web page, synchronized to audio CD...
- **ION Technology 0002-0002: Universal CD Recognizer ("CD-SUS™")**
  Description: recognizes Audio CD in user's CD ROM drive across the net.

Implementation: Shockwave application resident on web page speaks to CD ROM drive using Technology # 1, queries information from drive, derives unique identification code from values returned, looks up code in table, which returns information about CD. Table can be internal to the Shockwave application, reside on the user's hard drive or reside on remote server (queried by the Shockwave application through CGI).

Applications: Trigger events within web browser depending on which CD is recognized. E.g., make (through Shockwave or CGI) browser switch to appropriate web page for the album recognized; make browser switch to appropriate chat room for the album / artist recognized; display ads or messages tailored to characteristics of the album recognized; display information returned by database about the album: appropriate track names for the track being played, lyrics, et c.

- **ION Technology 0002-0003: CD Watcher**

  Description: keeps track of CDs being played by user (CD names, tracks played or skipped, et c.).

  Implementation: Shockwave application resident on web page determines CD being played by user using Technology # 1 and Technology # 3. User is uniquely identified through login procedure. Shockwave application stores user's CD usage information into log file on server.

  Applications: Database is used to provide user with tailored messages (ads, event announcements) depending on his listening habits. Database is used to compile correlations about users' tastes across music genres. Database provides feedback to music labels on tracks played on particular CDs.

- **ION Technology 0002-0004: Net Listening Rooms with Chat ("MUSIL™")**

  Description: multiple users listen to the same CD in synch in dedicated chat rooms inside their web browsers.

  Implementation: Shockwave application resident on web page speaks to CD ROM drive using Technology # 1, recognizes CD based on Technology # 3 and synchronizes itself to time on master server through CGI. Application switches to appropriate chat room on web server based on CD. Chat script (C code) on server calls other Shockwave application, which makes the CD play at the same place for everybody in the chat room in synch, and displays appropriate graphics / information for CD.

  Applications: Net chat environment with listening rooms for popular CD, where users chat while listening to CDs in synch.

- **ION Technology 0002-0005: Synchronized CD Tour**

  Description: script file called from web browser controls user's CD player and web browser display.

  Implementation: Shockwave application resident on web page reads script file on server. Script file feeds Shockwave application with information to display graphics and control the CD. Shockwave application speaks to CD ROM drive using Technology # 1 and displays graphical elements based on information provided by server, with timing and interaction specified by script file.

Applications: Downloadable interactive tour of specific audio CD, hosted by music artist or critique. Tour comments on certain passages, forces pictures to be displayed on users' screens, causes users' CD to play specified passages, provides user with choices of avenues to explore, ...

- **ION Technology 0002-0006: Live CD Tour Broadcast System**

  Description: host controls and synchronizes CD players and web browser displays of multiple users across the net.

  Implementation: Shockwave application resident on web page synchronizes itself to time on master server through CGI. Server feeds Shockwave application with information to display graphics and control the CD. Shockwave application speaks to CD ROM drive using Technology # 1 and displays graphical elements based on information provided by server, at times specified by server.

  Applications: Music artist or critique provides live "tour" of new audio CD: artist comments on certain passages, forces pictures to be displayed on users' screens, causes users' CD to play specified passages, ...

ION will attempt to patent its technology and concepts as it creates them. Initial response from patent counsel for the above technologies is favorable.

#10

Express Mailing label No.EL009769250US
Date of Deposit: April 15, 1998

NETWORK DELIVERY OF INTERACTIVE ENTERTAINMENT COMPLEMENTING AUDIO RECORDINGS

Related Applications

This invention claims priority of copending United States patent application Serial No. 08/838,082 filed 4/15/97.

BACKGROUND

1. Field of the Invention

This invention pertains to the field of computer networking, and more particularly to the use of network protocols to provide services to users that are related to CD ROMs, audio recordings and other distributed media.

2. Related Art

Over the past few years, on-line services have experienced explosive growth and have become a major new form of entertainment. Alongside this new entertainment, more traditional forms such as musical recordings have continued to be consumed on a massive scale.

The traditional experience of the musical recording is listening by a small group of persons gathered together in a room. The music fills the room acoustically, but there is

EXHIBIT C

little associated visual content, and there is only a limited interaction with the recording, consisting essentially of deciding which tracks to play and performing simple transformations on the recorded sound, such as setting the volume or applying an audio equalizer. This traditional experience dates back to the early age of 78 r.p.m. musical recordings almost a century ago.

The traditional production of a musical recording complements the traditional experience of the recording. The recording is produced in a number of recording sessions, subject to careful mixing and editing, and then released to the public. At that point, the recording is in a fixed form, nowadays an audio CD, whose purpose is to record as faithfully as possible the final sonic experience designed by its authors, the musicians, producer, and recording engineers.

Music videos have supplemented the traditional experience of musical recordings by allowing the association of visual content with tracks of such a recording. In practice, however, music videos have been broadcast, with all the problems of lack of user control which that implies, and they have not contributed to interactivity or participation by the consumer.

On-line services offer opportunities for enriching the experience associated with prerecorded material. The present invention is addressed to computer programs, systems, and protocols which can fulfil this promise.

SUMMARY OF THE INVENTION

It is therefore an object of this invention to provide computer programs, systems, and protocols which allow producers to deliver entertainment complementary to distributed media

recordings by means of on-line services such as the Internet. It is a further object of this invention to provide computer programs, systems, and protocols which allow such complementary entertainment to be meaningfully interactive for the consumer, such that the consumer can also be a creator of the experience.

It is a further object of the invention to achieve the foregoing objects by means of implementations designed to attain integration with existing environments and programs, particularly on the Internet, while retaining the flexibility to adapt to the continuing evolution of standards for on-line services.

In a first aspect of the present invention provides a means for producers and sellers of distributed media such as CDs to maintain and strengthen their connection to their customers. Record companies download and periodically update a central library of complimentary content for CD's the company has in the market. The software of the present invention operate as a plug-in to a users web browser and directs a user with a record company's CD to a particular section of the central library appropriate for the user's CD.

In another aspect of the present invention, called "CD Watcher" data representative of the users listening habits relative to a record company's CD is transferred to the record company when complimentary content is delivered to the user over a network connection.

Alternatively, record companies contributing and maintaining the central library have access to the listening habits of all users who have accessed the central library for complimentary content.

In another aspect of the invention, software is provided which permits a computer program running on a remote host to control a distributed media player such as a compact disk (CD) player, DVD player, or the like on a user's computer. (For convenience, we use the term "CD" to refer to all distributed media and the term "CD player" to refer also to all distributed media players such as DVD players and similar devices.) The software is designed to permit the remote host both to initiate actions on the CD player and to become aware of actions which the user has initiated by other control means, such as the buttons on the CD player's front panel or a different CD player control program. This aspect of the invention is a building-block for the provision of complementary entertainment for CD content when those recordings are fixed in the prevailing contemporary form, the CD.

In another aspect of the invention, visual content, including interactive content, may be delivered over an on-line service in such a way that it is synchronized to the delivery of content from a musical recording. Such visual content may, for example, be synchronized to the playing of an audio CD or other distributed media in the user's computer. The visual content is thematically linked to the musical recording, for example in the manner of a music video.

In a further aspect of the invention, a method is provided for determining or assigning a substantially unique identifier to CD or other distributed media content consisting of a number of tracks. A unique identifier is a useful complement to the delivery of supplementary content in conjunction with the playing of a CD or other distributed media in that it allows the software which delivers the supplementary content to be sure

that the CD is in fact the correct CD to which the supplementary content corresponds. If the supplementary content is designed, for example, to accompany the Rosary Sonatas of Heinrich Ignaz Franz Biber, it would presumably not function well if the CD or other distributed media in the user's player were the soundtrack for the film Mary Poppins. The unique identifier also allows a CD or other distributed media to be used as a key to access a premium Web area. Furthermore, the unique identifier can allow the user to be directed to an area of the Web corresponding to the CD or other distributed media which is in the user's machine.

In a still further aspect of the invention, the immensely popular on-line service generally referred to as a "chat room" may be enhanced by means of a link to a CD recording which all persons in the room are playing. A remote host may control distributed media players in multiple remote locations The chat room experience as it exists today in on-line services has a disembodied quality by comparison with traditional face-to-face social encounters in which there are identifiable surroundings. The only common experience to the chat users today are the words of the chat as they fly by on a computer screen, and perhaps the user icons ("avatars") or other visual content occupying a small space on the screen. The use of a musical recording in conjunction with a chat room opens up the possibility of restoring to the experience a degree of the shared ambience of traditional social encounters. Furthermore, shared content such as a musical recording offers a focal point that allows chat-seekers to group together by means of shared interests in a particular type of recording.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a network diagram of a first embodiment of the present invention.

Fig. 2 is a flow diagram of the embodiment shown in Fig. 1.

Fig. 3 is a block diagram of the environment in which the present invention operates.

Fig. 4 is a block diagram of complimentary content according to an aspect of the present invention.

Fig. 5 is a flowchart of the synchronization code of the invention.

Fig. 6 is a flowchart of the sequence of operations for connecting the present invention to a chat room.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to Fig.'s 1 and 2, an embodiment of the present invention dynamically connects a user playing a CD with a remote host for data exchange. At block 11, the user links to a remote host and requests a download of client 26. To receive the download the user must provide some basic information, name, e-mail, chat name, etc. The registration information is exchanged for client 26 at block 11A. At block 10A user computer 10 is running computer program 12 such as a browser with client 26. At block 30A insertion of CD 30 into player 32 triggers action by client 26. Client 26 takes control of player 32 and scans CD 30. CD 31 may include time code 31A and other encoded data 31B. Client 26 uses the results of the CD scan to calculate a substantially unique CD ID 31, block 34. Some CD's may contain an ID text file or IRC code, there is no universal standard,

thus an ID calculation technique may yield a useful ID with any CD. This technique may create a pattern match 31F by sampling a subset of the content of CD 30 and using the sample to create a substantially unique fingerprint 31F of CD 30. While client 26 is calculating CD ID 31, at block 36 use demographic data 62 is also collected and temporarily stored by client 26.

Use demographic data 62 includes but is not limited to CD use profiles including most used tracks, total time of use, most used CDs, average length of time computer 10 is running, software loaded, most used software, software running concurrently with client and the like.

Calculation of a CD ID 31 stimulates client 26 to direct computer program 12 to check a local cache for CD ID 31. IF CD ID 31 is not present in the local cache client 26 links to look-up server 40 at block 38. If computer program 12 is not already running, client 26 may launch it. Once the link to look-up server 40 is established, client 26 sends CD ID 31 to look-up server 40. Look-up server 40 compares CD ID 31 against table 42. Table 42 is a look-up table linking CD ID's with some associated content and with particular addresses having complimentary content. Other information such as timing and control data, electronic coupons, advertisements and bonus content such as video with timing and control data may also be contained in table 42. At block 44, look-up server 40 sends information such as address 46 to the user in response to receipt of CD ID 31. The information sent to the user may or may not be based on the user demographic data and use demographic data 62 sent to look-up server 40. At block 48 client 26 establishes a link to address 46. Address 46 may be a

premium or subscription site such as site 51A in which case CD ID 31 may operate as a password.

In one aspect of the present invention, content suppliers 51-56 such as record companies 1-6 respectively, maintain a central library 50 on the web. Content suppliers may also include advertisers, CD retailers, and other content rights holders. Central library 50 may be on a single server such as look-up server 40 or it may be distributed. Central library 50 contains the complimentary content sites such as site 51A linked by the addresses in table 42 such as address 46. Each content supplier 51-56 may change the content of their site and add new links to additional sites as new CD's are released. As new sites are added, new CD ID's and linked addresses are added to table 42.

At block 49A, server 58 hosting site 51A transfers complimentary content 60 to the user's computer 10. Once the user is linked to site 51A, client 26 sends stored use demographic data 62 and CD status data 64 to look-up server 40 and or server 58. At block 66 client 26 continues to update and transfer use demographic data 62 and CD status data 64 to look-up server 40 and or server 58 as long as client 26 is running. Closed loop update 70 permits a content supplier, such as content suppliers 51-56, a real-time or near real-time look at which CDs are in use and relative frequency of use of CD elements and related information. Closed loop update 70 also provides control of distributed media playing on a users computer 10. A removal or change of CD at block 68 would return the client to block 30A.

In another embodiment, this invention operates on the World Wide Web. The HTTP protocol on the web is run atop a general

connection-oriented protocol, which today is generally TCP/IP, described in Douglas E. Comer, *Internetworking with TCP/IP* (3d ed. 1995). However, the invention described here is not limited to HTTP running over any particular kind of network software or hardware. The principles of the invention apply to other protocols for access to remote information that may come to compete with or supplant HTTP.

Referring now to Fig. 3, a user sits at his or her computer 10 and runs a computer program 12 such as a browser or other client software. The browser sends out HTTP requests 14 to other computers, referred to as servers such as server 16. In requests, particular items of data, referred to as resources, which are available on servers, are referred to by means of uniform resource locators (URL's), character strings in a particular format defined in Berners-Lee et al., supra. A URL includes both an identification of the server and an identification of a particular item of data within the server. Reacting to the requests, the servers return responses 18 to the user's browser, and the browser acts upon those responses, generally by displaying some sort of content to the user.

The content portion of the responses can be a "Web page," expressed in the hypertext markup language (HTML) such as pages 20 and 22. That language allows one to express content consisting of text interspersed with bitmap-format images and links (also known as anchors and hyperlinks). The links are further URL's to which the browser may, at the user's prompting, send further requests.

The responses can also include more complex commands to be interpreted by the browser, e.g., commands which result in an animation as discussed below for Fig. 4. HTML itself does not

define complex commands, but rather they are considered to belong to separately-defined scripting languages, of which two currently common ones are JavaScript and VBScript.

In addition to extending the function of the browser by means of code written in a scripting language, it is also possible to extend the function of a browser with compiled code. Such compiled code is referred to as a "plug-in." The precise protocol for writing a plug-in is dependent on the particular browser. Plug-ins for the Microsoft browser are referred to by the name of ActiveX controls.

Plug-ins may be very complex. A plug-in which may advantageously be used in connection with the invention is Shockwave from Macromedia. It permits animations which are part of a server response to be downloaded and played to the user. Shockwave defines its own scripting language called Lingo. Lingo scripts are contained within the downloadable animations which the Shockwave plug-in can play. The general format of a Shockwave animation is a timeline consisting of a series of frames, together with a number of visual objects which appear, perform motions, and disappear at particular frames within the timeline. To achieve more complex effects within a Shockwave animation, Lingo scripts may be invoked in addition to predefined visual objects.

A currently preferred embodiment of the present invention employs a plug-in, referred to as the command plug-in 24, which provides to a scripting language the ability to command and monitor in a detailed fashion the playing of a CD recording. The command plug-in should provide and monitor, at a minimum, the following basic functions:

(1) Start and stop play.

(2) Get current track and position within the track.

(3) Seek to a track and a position within the track.

(4) Get and set volume.

(5) Get information regarding the CD (e.g., the number of tracks, their lengths, the pauses between tracks).

(6) Get information regarding the capabilities of the CD drive.

Other functions may be provided and monitored, limited only by what the underlying operating system services are able to accommodate. The monitored functions are included in use demographic data 62 which is transferred to server 40 and or servers such as server 58.

The command plug-in may be written in a conventional programming language such as C++. The plug in must conform to the existing standards for plug-ins, such as those required of Microsoft ActiveX objects. In order to obtain the information and carry out the functions which the command plug-in makes available to the scripting language, the command plug-in relies on functions which provide control and information regarding the playing musical recording. These functions will depend on the precise source of the recording. If, as in one embodiment of the present invention, the recording being played is an audio CD in the computer CD player, and if the browser is running under Microsoft Windows 3.1 or Windows 95 or Windows CE, these functions would be the MCI functions, which form a part of the Win32 application programming interface. These functions are documented, for example, in Microsoft Win32 Programmer's Reference. Different functions may be provided by streaming audio receivers, as for example receivers which capture audio

which is coming into the user's computer over a network connection in a suitable audio encoding format such as MPEG.

An important point to note about the implementation of the command plug-in is that the operations which it carries out, as for example "seeks", may take times on the order of a second. It is undesirable for command-plug-in 24 to retain control of computer 10 during that interval, so it is important that command plug-in 24 relinquish control of computer 10 to the browser whenever a lengthy operation is undertaken, and report on the results of the operation via the asynchronous event handling capability used in the common scripting languages.

Given the above summary of the functions which the command plug-in provides, a general knowledge of how to write plug-ins (e.g., of how to write ActiveX objects), and a knowledge of the relevant application programming interface for controlling the play of the CD (e.g., MCI in Win32), a person skilled in the art could readily and without undue experimentation develop an actual working command plug-in. For this reason, further details of how the command plug-in is implemented are not provided here.

The existence of a command plug-in providing the functions listed above to a scripting language is a foundation on which entertainment complementary to the content of a CD may be constructed. In particular, it is possible to devise, building on this foundation, a method for synchronizing the display of complementary content by means of the scripting language with the events which are occurring on the CD.

Referring now to Fig.'s 4 and 5, synchronization of the complementary content to the CD proceeds as follows. For

example, complimentary content 60 may be provided by means of animation such as Shockwave animation, including frames F_1-F_n and script 72. Complimentary content 60 is downloaded from server 58 and displayed for the user by means of a Shockwave plug-in. This downloading may take place before the animation is displayed, or alternatively it make take place as the animation is being displayed, provided the user's connection to the network is fast enough to support download at an appropriate speed. The downloading is a function provided by the Shockwave plug-in itself.

As the Shockwave animation is played, script 72 such as a Lingo script executes each time a frame F_n finishes displaying. The Lingo script contains a description of the relationship which should exist between frames of the animation and segments of the CD content, identified by track number and by time. The Lingo script determines, by means of the command plug-in described above, at which track and time the play of the CD is. It then refers to the description in order to determine which frames of the animation correspond to that portion of the CD. If the current frame is not one of those frames, the Lingo script resets the time line of the animation so that the animation will begin to play at the frame which corresponds to the current position of the CD. This permits the visual content to catch up if it ever lags the CD, for example because downloading from the network has fallen behind, because the user's computer lacks the cycles to play the animation at full speed, or because the user has fast-forwarded the CD.

Referring now to Fig 4, the synchronization algorithm may control individual frames or groups of contiguous frames. complimentary content 60 includes frames F_1-F_n and script 72. At

block 200, a correspondence is established between each frame F_n or group of frames and a particular segment of CD 30. At the end of each frame F_n of the animation block 205, the position of CD 30 is determined, block 210. A test is done at block 215 to determine whether the position of CD 30 is within the segment of the recording that corresponds to the group of frames to which the next sequential frame belongs. If the position of CD 30 is within that segment, the playback of the animation proceeds with that next frame block 230. If the position of CD 30 is not within that segment, then at blocks 220 and 225 the playback of the animation is advanced to the frame corresponding to where the CD is.

A further aspect of the present invention is a touring mode. With client 26 in touring mode, a remote device such as server 58 may control one or more user devices through delivery of complimentary content 60 interspersed with player 26 control data to provide the one or more users with a guided tour of a particular distributed media such as CD 30.

A still further aspect of the invention is the ability, by making use of command plug-in 24, to provide a technique for establishing a unique identifier for a CD, CD ID 31, which is located in the user's CD player 32. The unique identifier may be based on the number and lengths of the tracks (measured in blocks, i.e., 1/75ths of a second), so that the identifier would be a concatenation of these lengths. In practice, however, it is desirable to have a somewhat shorter identifier, so the unique identifier is preferably the concatenation of the track lengths expressed in a fairly coarse unit, such as 1/4th of a second.

Appendix A contains source code, written in C, for a fuzzy comparison algorithm suitable for determining whether two audio CDs are exactly or approximately the same. The fuzzy comparison algorithm proceeds as follows. For each of the two audio CDs to be compared, one determines the lengths of all the tracks in the recordings in milliseconds. One then shifts all track lengths to the right by eight bits, in effect performing a truncating division by 28 = 256. One then goes through both of the recordings track by track, accumulating as one proceeds two numbers, the match total and the match error. These numbers are both initialized to zero at the start of the comparison. For each of the tracks, one increments the match total by the shifted length of that track in the first CD to be compared, and one increments the match error by the absolute value of the difference between the shifted lengths of the track in the two CDs. When one gets to the last track in the CD with the fewer number of tracks, one continues with the tracks in the other CD, incrementing both the match total and the match error by the shifted lengths of those tracks. Following these steps of going through the tracks, the algorithm then divides the match error by the match number, subtracts the resulting quotient from 1, and converts the difference to a percentage which is indicative of how well the two CDs match.

Appendix B contains source code, written in C, for a comparison algorithm suitable for determining whether two audio CDs are exactly the same. The algorithm generates from the number of tracks, the track lengths, and the start and end times of the tracks an 8-byte value. The high order 4 bytes are obtained by summing the start and end times of all tracks, expressed in milliseconds. The low order 4 bytes are obtained

by summing the lengths of all tracks expressed in milliseconds, shifting the sum left ten bits, and adding the number of tracks.

CD ID 31 may be employed as a database key. A site such as site 52A may maintain a database of information about CDs, for example information about all CDs issued by record company 2 can be maintained on that record company's site. There are various alternative ways for users to navigate this information. For example, they could use a Web page containing many hyperlinks as a table of contents, or they could use a conventional search engine. A third way of searching, which is enabled by CD ID 31 of the invention, is for there to be a Web page which invites the user to place in player 32 the CD about which he or she is seeking information, for example CD 30. Upon detection of the presence of CD 30 in the drive, a script in the Web page computes CD ID 31 corresponding to CD 30 and sends it to server 58. Server 58 then displays information about the CD retrieved from a database on the basis of CD ID 31. This information may include a Web address (URL) that is related to the CD (e.g., that of the artists' home page), simple data such as the names of songs on the CD, and also complementary entertainment, including potentially photographs (e.g., of the band), artwork, animations, and video clips. It is also possible to arrange things so that, when the user inserts a CD into the computer, (i) the Web browser is launched if not already running, (ii) the browser computes the CD's unique identifier and from that unique identifier derives a URL, and (iii) the browser does an HTTP get transaction on that URL.

An alternative application of unique identifiers for musical recordings is to employ a CD as a key for entering into a premium area of the Web. There are presently premium areas of

the Web to which people are admitted by subscription. A simple form of admission based on the unique identifier is to require, before accessing a particular area of the Web, that the user place in his or her CD drive a particular CD, or a CD published by a particular company or containing the music of a particular band or artist. This is readily accomplished by means of a script which invokes the functions provided by the command plug-in and computes a unique identifier.

Another aspect of the invention is the connection of chat rooms with musical recordings. The goal is to provide all participants in a chat room with the same music at approximately the same time.

One conventional network protocol for chat services is Interney Relay Chat (IRC), described J. Oikarinen & D. Reed, Internet Relay Chat Protocol (Internet Request for Comments No. 1459, 1993). In this protocol, when one becomes a client of a chat server, one sends the name of a chat room. The chat server receives messages from all of its of clients and relays the messages sent in by one client to all the other clients connected in the same room as that client. The messages which a client sends are typically typed in by the user who is running the client, and the messages which a client receives are typically displayed for the user who is running the client to read.

In a preferred embodiment of the invention, a chat client is customized by means of a plug-in, which we will call the chat plug-in. The chat client is started up by a browser as follows (see Fig. 5). The user connects by means of the browser to a central Web page (box 300) which, upon being downloaded, asks that the user insert a CD into his or her player (box 305). A

unique identifier of the CD is computed and communicated back to the server by using the control plug-in described above under the command of a script in the central Web page (box 310). The server then employs the unique identifier to determine whether it has a chat room focused on the CD (box 315). This step may be carried out by looking the unique identifier up in a database using techniques well known in the art. There exists a vast literature on connecting Web pages to databases, e.g., December & Ginsburg, supra, chapter 21. If a chat room focused on the CD exists or can be created, the server responds with the name of that chat room, and the browser starts up a chat client on the user's computer as a client of that chat room (box 320).

The chat room's name is set by the server to contain information about the track which the CD is playing in the other chat room clients' machines and the time at which the track started to play, as well as about the volume at which the CD is playing. The chat client plug-in employs that information to direct the control plug-in to set the CD in the user's computer to play in such a manner that it is approximately synchronized to the CD which is playing in the other chat room clients' machines (box 320).

Each user in the chat room is able to control the CD which is playing in his or her machine. Control actions result in the chat plug-in sending messages to the chat server which describe the control action being taken (box 325). For example, such messages may indicate a change in the position of the CD, a change in the volume, or the ejection of the CD to replace it with another. The chat plug-ins running on the other users' machines, upon seeing a message of this kind, replicate the

action (as far as possible) on the other users' machines by using the control plug-in described above (box 330).

In a further aspect of the invention, a chat room focused on a particular musical recording might allow for a voting procedure to select particular tracks. A simple voting procedure would be for each chat plug-in to act upon a change message of the kind described in the preceding paragraph only when it sees two identical consecutive change messages. This would mean that in order to change the track which is being played, it would be necessary for two users to change to that track. The number two may be replaced by a higher number.

In a further aspect of the invention the messages delivered to the users of a chat can be driven from a text file rather than manual typing. This would allow a pre-recorded experience to be played back for a group of chat users. Such a technique may be used to create a pre-recorded, narrated tour of an audio CD.

An important advantage of the embodiment described above is that it may be used with any chat server software which supports the minimal functionality required by Internet Relay Chat or by a protocol providing similar minimum chat service. The additional software required is located in the chat client plug-in and in the central Web page, with its connection to a database of CD information.

CLAIMS

I claim:

1. A method of synchronizing content from a first distributed media such as a CD with complimentary content from a remote device delivered over a network, comprising:

playing a first distributed media on a local electronic device to manifest first distributed media content;

transferring complimentary content and synchronization information from a remote device to said local device over a network; and

controlling said first distributed media using said synchronization information to synchronize manifestation of said first distributed media content with said complimentary content.

2. The method of claim 1 further comprising:

transferring distributed media status information from said first distributed media to said remote device over a network; and

controlling manifestation of said complimentary content using distributed media status information and said synchronization information.

3. The method of claim 1 wherein said first distributed media includes audio content.

4. The method of claim 1 wherein said first distributed media includes audio and video content.

5. The method of claim 1 wherein said first distributed media includes music.

6. The method of claim 1 further comprising:

analyzing said first distributed media;

computing an identification code based on said content of said first distributed media; and

transferring complimentary content and synchronization information from said remote device based on said identification code.

7. The method of claim 1 wherein said remote device is a network server.

8. The method of claim 1 wherein said remote device is a second user device.

9. A device for synchronizing content from a first prerecorded media with complimentary content from a remote device delivered over a network, comprising:

a local electronic device having a video display means;

a prerecorded content player connected to or integral with said local electronic device;

means for transferring complimentary content and synchronization information from a remote device to said local device over a network; and

means for controlling said prerecorded content player using said synchronization information to synchronize manifestation of said first prerecorded media content with said complimentary content.

10. The device of claim 9 further comprising:

means for transferring prerecorded media status information from said first prerecorded media to said remote device over a network; and

means for controlling manifestation of said complimentary content using prerecorded media status information and said synchronization information.

11. The device of claim 9 wherein said first prerecorded media is a CD.

12. The device of claim 9 wherein said first prerecorded media is a DVD.

13. The device of claim 9 wherein said first prerecorded media includes audio content.

14. The device of claim 9 wherein said first prerecorded media includes audio and video content.

15. The device of claim 9 wherein said first prerecorded media includes music.

16. The device of claim 9 further comprising:

means for analyzing said first prerecorded media;

means for computing an identification code based on said content of said first prerecorded media; and

means for transferring complimentary content and synchronization information from said remote device based on said identification code.

17. The device of claim 9 wherein said remote device is a network server.

18. The device of claim 9 wherein said remote device is a second user device.

ABSTRACT

Entertainment content complementary to a musical recording is delivered to a user's computer by means of a computer network link. The user employs a browser to access the computer network. A plug-in for the browser is able to control an audio CD or other device for playing the musical recording. A script stored on the remote computer accessed over the network is downloaded. The script synchronizes the delivery of the complementary entertainment content with the play of the musical recording.

APPENDIX A

```
/*
 *  FUZZY CD ID
 *  (c) 1996-1998 ION
 *
 *
 *  by Ty Roberts
*/

#include <stdio.h>
#include <stdlib.h>
#include <time.h>

struct fuzzyCDid {
     short               numberTracks;  // start time in
milliseconds
     unsigned short      fuzzlength[100];
};

typedef struct fuzzyCDid fuzzyCDid, *fuzzyCDidPtr;

// structure of a cd track with all times stored in milliseconds

struct cdtrack {
     long beginMs;  // start time in milliseconds
     long endMs;         // end time in milliseconds
     long lengthMs; // length in milliseconds
};

typedef struct cdtrack cdtrack, *cdTrackPtr;

struct cd {
     short     numberTracks;
     cdtrack   track[100];
};

typedef struct cd cd, *cdPtr;

void CreateFuzzyId( fuzzyCDidPtr fid, cdPtr cd  );

float     FuzzyMatch( fuzzyCDidPtr fid1, fuzzyCDidPtr fid2 );

// SUBROUTINES

void CreateFuzzyId( fuzzyCDidPtr fid, cdPtr cd  )
{
     long      i;
```

```
     // first copy in the number of tracks
     fid->numberTracks = cd->numberTracks;

     for(i=0;i<fid->numberTracks;i++) {
          // shift left and create a MSB length thats not exact
          fid->fuzzlength[i] = (short)(cd-
>track[i].lengthMs>>8);
     }
}

float     FuzzyMatch( fuzzyCDidPtr fid1, fuzzyCDidPtr fid2 )
{
     long      fidmatcherr = 0,  fidmatchtotal = 0;
     short          i, trackcnt;
     float          matchpercent;

     // find the larger number of tracks
     trackcnt = fid1->numberTracks<fid2->numberTracks ? fid2-
>numberTracks : fid1->numberTracks;

     // cycle thru the tracks accumulating error and total
comparedtimes
     for(i=0;i<trackcnt;i++) {
          if ((i < fid1->numberTracks) && (i < fid2-
>numberTracks)) {
               fidmatcherr += abs(fid1->fuzzlength[i] - fid2-
>fuzzlength[i]);
               fidmatchtotal += fid1->fuzzlength[i];
          } else if (i >= fid2->numberTracks) {
               fidmatcherr += fid1->fuzzlength[i];
               fidmatchtotal += fid1->fuzzlength[i];
          } else if (i >= fid1->numberTracks) {
               fidmatcherr += fid2->fuzzlength[i];
               fidmatchtotal += fid2->fuzzlength[i];
          }
     }

     if (fidmatcherr > 0) {
          matchpercent = 100 -
(((float)fidmatcherr/(float)fidmatchtotal) *100);
     } else {
          matchpercent = 100;
     }
     return matchpercent;
}
```

```
void main(void)
{
     short i;
     float     matchpercent;

     // create global structures for two complete cds with up to
100 tracks
     cd   cd2id;
     fuzzyCDid fidcd2id;
     cd   cdFromDB;

     fuzzyCDid fidcdFromDB;

     printf ("Test #1 will compare two CDs that are exactly the
same\n\n");

     // put in some test values for the cd track lengths
     // since these are in ms, its basically 60000 = 1 minute

     cd2id.track[0].lengthMs = 121323;
     cd2id.track[1].lengthMs = 234565;
     cd2id.track[2].lengthMs = 566437;
     cd2id.track[3].lengthMs = 245120;
     cd2id.track[4].lengthMs = 20000;
     cd2id.track[5].lengthMs = 120386;
     cd2id.track[6].lengthMs = 323453;
     cd2id.numberTracks = 7;

     for(i=1;i<cd2id.numberTracks;i++) {
          printf ("CD #1: Track = %d   length in minutes =
%f\n",
               i, (float)cd2id.track[i].lengthMs/60000.0);
     }
     printf("\n");

     cdFromDB.track[0].lengthMs = 121323;
     cdFromDB.track[1].lengthMs = 234565;
     cdFromDB.track[2].lengthMs = 566437;
     cdFromDB.track[3].lengthMs = 245120;
     cdFromDB.track[4].lengthMs = 20000;
     cdFromDB.track[5].lengthMs = 120386;
     cdFromDB.track[6].lengthMs = 323453;
     cdFromDB.numberTracks = 7;

     for(i=1;i<cdFromDB.numberTracks;i++) {
          printf ("CD #2: Track = %d   length in minutes =
%f\n",
```

```
                i, (float)cdFromDB.track[i].lengthMs/60000.0 );
        }

        CreateFuzzyId( &fidcd2id, &cd2id  );
        CreateFuzzyId( &fidcdFromDB, &cdFromDB  );

        matchpercent = FuzzyMatch( &fidcd2id, &fidcdFromDB );
        printf ("The cd's matchpercent was computed as=%f",
matchpercent);
        printf ("\n");
        printf ("\n");

        printf ("Test #2 will compare two cd that are nearly the
same\nexcept they have diffent # of tracks \n");

        // put in some test values for the cd track lengths
        // since these are in ms, its basically 60000 = 1 minute
        cd2id.track[0].lengthMs = 121323;
        cd2id.track[1].lengthMs = 234565;
        cd2id.track[2].lengthMs = 566437;
        cd2id.track[3].lengthMs = 245120;
        cd2id.track[4].lengthMs = 20000;
        cd2id.track[5].lengthMs = 120386;

        cd2id.track[6].lengthMs = 323453;
        cd2id.numberTracks = 7;

        for(i=1;i<cd2id.numberTracks;i++) {
            printf ("CD #1: Track = %d   length in minutes =
%f\n",
                i, (float)cd2id.track[i].lengthMs/60000.0 );
        }
        printf ("\n");
        cdFromDB.track[0].lengthMs = 121323;
        cdFromDB.track[1].lengthMs = 234565;
        cdFromDB.track[2].lengthMs = 566437;
        cdFromDB.track[3].lengthMs = 245120;
        cdFromDB.track[4].lengthMs = 20000;
        cdFromDB.track[5].lengthMs = 120386;
        cdFromDB.numberTracks = 6;

        for(i=1;i<cdFromDB.numberTracks;i++) {
            printf ("CD #2: Track = %d   length in minutes =
%f\n",
                i, (float)cdFromDB.track[i].lengthMs/60000.0 );
        }
```

```
     CreateFuzzyId( &fidcd2id, &cd2id  );
     CreateFuzzyId( &fidcdFromDB, &cdFromDB  );
     matchpercent = FuzzyMatch( &fidcd2id, &fidcdFromDB );

     printf ("The cd's matchpercent was computed
as=%f",matchpercent);
     printf ("\n");
     printf ("\n");
     printf ("Test #3 will compare two cd that are not the
same\n\n");

     // put in some test values for the cd track lengths
     // since these are in ms, its basically 60000 = 1 minute
     cd2id.track[0].lengthMs = 34213;
     cd2id.track[1].lengthMs = 334565;
     cd2id.track[2].lengthMs = 231423;
     cd2id.track[3].lengthMs = 134122;
     cd2id.track[4].lengthMs = 2342;
     cd2id.track[5].lengthMs = 3487;
     cd2id.track[6].lengthMs = 9976;
     cd2id.numberTracks = 7;

     for(i=1;i<cd2id.numberTracks;i++) {
          printf ("CD #1: Track = %d   length in minutes =
%f\n",
               i, (float)cd2id.track[i].lengthMs/60000.0 );
     }
     printf ("\n");
     cdFromDB.track[0].lengthMs = 121323;
     cdFromDB.track[1].lengthMs = 234565;
     cdFromDB.track[2].lengthMs = 566437;
     cdFromDB.track[3].lengthMs = 245120;
     cdFromDB.track[4].lengthMs = 20000;
     cdFromDB.track[5].lengthMs = 120386;
     cdFromDB.track[6].lengthMs = 323453;
     cdFromDB.numberTracks = 6;


     for(i=1;i<cdFromDB.numberTracks;i++) {
          printf ("CD #2: Track = %d   length in minutes =
%f\n",
               i, (float)cdFromDB.track[i].lengthMs/60000.0 );
     }

     CreateFuzzyId( &fidcd2id, &cd2id);
     CreateFuzzyId( &fidcdFromDB, &cdFromDB);
```

```
        matchpercent = FuzzyMatch( &fidcd2id, &fidcdFromDB );
        printf ("The cd's matchpercent was computed
as=%f",matchpercent);
}
```

APPENDIX B

```
/*
*  EXACT MATCH CD ID
*  © 1996-1998  ION
*
*
*  by Ty Roberts
*/

#include <stdio.h>
#include <stdlib.h>
#include <time.h>

struct cdid{
     long id[2];
};

typedef struct cdid cdid, *cdidPtr;

// structure of a cd track with all times stored in milliseconds

struct cdtrack{
     long beginMs;  // start time in miliseconds
     long endMs;          // end time in milliseconds
     long lengthMs; //length in Miliseconds
};

typedef struct cdtrack cdtrack, *cdTrackPtr;

struct cd {
     short     numberTracks;
     cdtrack   track[100];
};

typedef struct cd cd, *cdPtr;

void CreateUniqueId( cdidPtr cid, cdPtr cd  );

// SUBROUTINES
void CreateUniqueId( cdidPtr cid, cdPtr cd  )
{
     long      i, t, n;

     t = 0;
     n = 0;

     for(i=0;i<cd->numberTracks;i++) {
```

```
            // shift left and create a MSB length thats not exact
            t += cd->track[i].lengthMs;
            n += cd->track[i].beginMs + cd->track[i].endMs;
        }
        cid->id[0] = t<<10+cd->numberTracks;
        cid->id[1] = n;

}

void main(void)
{
        short i;
        short     matchtest;

        // create global structures for two complete cds with up to
100 tracks
        cd   cd2id;
        cdid cd2UID;

        cd   cdFromDB;
        cdid cdFromDBUID;

        printf ("Test #1 will compare two cd that are exactly the
same\n\n");

        // put in some test values for the cd track lengths
        // since thes are in ms, its basically 60000 = 1 minute
        cd2id.track[0].beginMs = 0;
        cd2id.track[1].beginMs = 100001;
        cd2id.track[2].beginMs = 231001;
        cd2id.track[3].beginMs = 345001;
        cd2id.track[4].beginMs = 435001;
        cd2id.track[5].beginMs = 460001;
        cd2id.track[6].beginMs = 590001;

        cd2id.track[0].endMs = 100000;
        cd2id.track[1].endMs = 231000;
        cd2id.track[2].endMs = 345000;
        cd2id.track[3].endMs = 435000;
        cd2id.track[4].endMs = 460000;
        cd2id.track[5].endMs = 590000;
        cd2id.track[6].endMs = 690000;
        cd2id.track[0].lengthMs = cd2id.track[0].endMs -
cd2id.track[0].beginMs;
        cd2id.track[1].lengthMs = cd2id.track[1].endMs -
cd2id.track[1].beginMs;
```

```
     cd2id.track[2].lengthMs = cd2id.track[2].endMs -
cd2id.track[2].beginMs;
     cd2id.track[3].lengthMs = cd2id.track[3].endMs -
cd2id.track[3].beginMs;
     cd2id.track[4].lengthMs = cd2id.track[4].endMs -
cd2id.track[4].beginMs;
     cd2id.track[5].lengthMs = cd2id.track[5].endMs -
cd2id.track[5].beginMs;
     cd2id.track[6].lengthMs = cd2id.track[6].endMs -
cd2id.track[6].beginMs;
     cd2id.numberTracks = 7;

     for(i=1;i<cd2id.numberTracks;i++) {
          printf ("CD #1: Track = %d   length inminutes = %f\n",
i, (float)cd2id.track[i].lengthMs/60000.0 );
     }
     printf ("\n");
     cdFromDB.track[0].beginMs = 0;
     cdFromDB.track[1].beginMs = 100001;
     cdFromDB.track[2].beginMs = 231001;
     cdFromDB.track[3].beginMs = 345001;
     cdFromDB.track[4].beginMs = 435001;
     cdFromDB.track[5].beginMs = 460001;
     cdFromDB.track[6].beginMs = 590001;
     cdFromDB.track[0].endMs = 100000;
     cdFromDB.track[1].endMs = 231000;
     cdFromDB.track[2].endMs = 345000;
     cdFromDB.track[3].endMs = 435000;
     cdFromDB.track[4].endMs = 460000;
     cdFromDB.track[5].endMs = 590000;
     cdFromDB.track[6].endMs = 690000;
     cdFromDB.track[0].lengthMs = cd2id.track[0].endMs -
cd2id.track[0].beginMs;
     cdFromDB.track[1].lengthMs = cd2id.track[1].endMs -
cd2id.track[1].beginMs;
     cdFromDB.track[2].lengthMs = cd2id.track[2].endMs -
cd2id.track[2].beginMs;
     cdFromDB.track[3].lengthMs = cd2id.track[3].endMs -
cd2id.track[3].beginMs;
     cdFromDB.track[4].lengthMs = cd2id.track[4].endMs -
cd2id.track[4].beginMs;
     cdFromDB.track[5].lengthMs = cd2id.track[5].endMs -
cd2id.track[5].beginMs;
     cdFromDB.track[6].lengthMs = cd2id.track[6].endMs -
cd2id.track[6].beginMs;
     cdFromDB.numberTracks = 7;
```

```
     for(i=1;i<cdFromDB.numberTracks;i++) {
          printf ("CD #2: Track = %d   length inminutes = %f\n",
i, (float)cdFromDB.track[i].lengthMs/60000.0 );
     }

     CreateUniqueId( &cd2UID, &cd2id  );

     printf( "Unique ID for CD #1 = %d%d\n", cd2UID.id[0],
cd2UID.id[1] );

     CreateUniqueId( &cdFromDBUID, &cdFromDB  );
     printf( "Unique ID for CD #2 = %d%d\n", cdFromDBUID.id[0],
cdFromDBUID.id[1] );

     matchtest = (cd2UID.id[0] == cdFromDBUID.id[0]) &&
(cd2UID.id[1] == cdFromDBUID.id[1]);

     printf ("The cd's match if result is non zero
matchresult=%d",matchtest);

     printf ("\n");

     printf ("\n");
     printf ("Test #2 will compare two cd that are nearly the
same\nexcept they have diffent # of tracks \n");

     // put in some test values for the cd track lengths
     // since thes are in ms, its basically 60000 = 1 minute
     cd2id.track[0].beginMs = 0;
     cd2id.track[1].beginMs = 100001;
     cd2id.track[2].beginMs = 231001;
     cd2id.track[3].beginMs = 345001;
     cd2id.track[4].beginMs = 435001;
     cd2id.track[5].beginMs = 460001;
     cd2id.track[6].beginMs = 590001;
     cd2id.track[0].endMs = 100000;
     cd2id.track[1].endMs = 231000;
     cd2id.track[2].endMs = 345000;
     cd2id.track[3].endMs = 435000;
     cd2id.track[4].endMs = 460000;
     cd2id.track[5].endMs = 590000;
     cd2id.track[6].endMs = 690000;

     cd2id.track[0].lengthMs = cd2id.track[0].endMs -
cd2id.track[0].beginMs;
```

```
     cd2id.track[1].lengthMs = cd2id.track[1].endMs -
cd2id.track[1].beginMs;
     cd2id.track[2].lengthMs = cd2id.track[2].endMs -
cd2id.track[2].beginMs;
     cd2id.track[3].lengthMs = cd2id.track[3].endMs -
cd2id.track[3].beginMs;
     cd2id.track[4].lengthMs = cd2id.track[4].endMs -
cd2id.track[4].beginMs;
     cd2id.track[5].lengthMs = cd2id.track[5].endMs -
cd2id.track[5].beginMs;
     cd2id.track[6].lengthMs = cd2id.track[6].endMs -
cd2id.track[6].beginMs;
     cd2id.numberTracks = 7;

     for(i=1;i<cd2id.numberTracks;i++) {
          printf ("CD #1: Track = %d   length inminutes = %f\n",
i, (float)cd2id.track[i].lengthMs/60000.0 );
     }

     printf ("\n");
     cdFromDB.track[0].beginMs = 0;
     cdFromDB.track[1].beginMs = 100001;
     cdFromDB.track[2].beginMs = 231001;
     cdFromDB.track[3].beginMs = 345001;
     cdFromDB.track[4].beginMs = 435001;
     cdFromDB.track[5].beginMs = 460001;
     cdFromDB.track[6].beginMs = 590001;

     cdFromDB.track[0].endMs = 100000;
     cdFromDB.track[1].endMs = 231000;
     cdFromDB.track[2].endMs = 345000;
     cdFromDB.track[3].endMs = 435000;
     cdFromDB.track[4].endMs = 460000;
     cdFromDB.track[5].endMs = 590000;

     cdFromDB.track[0].lengthMs = cd2id.track[0].endMs -
cd2id.track[0].beginMs;
     cdFromDB.track[1].lengthMs = cd2id.track[1].endMs -
cd2id.track[1].beginMs;
     cdFromDB.track[2].lengthMs = cd2id.track[2].endMs -
cd2id.track[2].beginMs;
     cdFromDB.track[3].lengthMs = cd2id.track[3].endMs -
cd2id.track[3].beginMs;
     cdFromDB.track[4].lengthMs = cd2id.track[4].endMs -
cd2id.track[4].beginMs;
     cdFromDB.track[5].lengthMs = cd2id.track[5].endMs -
cd2id.track[5].beginMs;
```

```
     cdFromDB.numberTracks = 6;

     for(i=1;i<cdFromDB.numberTracks;i++) {
          printf ("CD #2: Track = %d   length inminutes = %f\n",
i, (float)cdFromDB.track[i].lengthMs/60000.0 );
     }

     CreateUniqueId( &cd2UID, &cd2id  );
     printf( "Unique ID for CD #1 = %d%d\n", cd2UID.id[0],
cd2UID.id[1] );

     CreateUniqueId( &cdFromDBUID, &cdFromDB  );
     printf( "Unique ID for CD #2 = %d%d\n", cdFromDBUID.id[0],
cdFromDBUID.id[1] );

     matchtest = (cd2UID.id[0] == cdFromDBUID.id[0]) &&
(cd2UID.id[1] == cdFromDBUID.id[1]);

     printf ("The cd's match if result is non zero
matchresult=%d",matchtest);
     printf ("\n");
     printf ("\n");
}
```